IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) ~~Method~~ A method of reconstructing coherent scatter computed tomography ~~(CSCT)~~ data of an object of interest, the method comprising the ~~steps~~ acts of:

acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

performing a beam hardening compensation of scatter radiation data on ~~the basis of~~ based on the acquired attenuation data and based on an energy shift of an equivalent object equivalent to the object of interest; wherein the scatter radiation data is based on scatter radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data by using the compensated scatter radiation data.

2. (Currently Amended)   The method of claim 1, wherein ~~a~~

~~compensating of a beam hardening effect is performed on the basis~~

~~of an energy shift determined on the basis of an equivalent object;~~

~~wherein~~ the energy shift ~~occurring with~~ of the equivalent object

caused by ~~the~~ a beam hardening effect is known.

3. (Currently Amended)   The method of claim 1, further

comprising the ~~steps~~ acts of:

determining a mean attenuation caused by the object of

interest ~~on the basis of~~ based on the attenuation data;

determining an equivalent thickness of a pre-selected ~~first~~

material ~~on the basis~~ of the equivalent object based on the mean

attenuation;

determining ~~an~~ the energy shift ~~on the basis of~~ based on the

equivalent thickness of the pre-selected ~~first~~ material; and

compensating the scatter radiation data by using the energy

shift.

4. (Currently Amended)   The method of claim 1, further

comprising the ~~steps~~ acts of:

reconstructing a volume data set comprising absorption

coefficients of the object of interest;

determining radiation spectra for scattered photons of the

scatter radiation;

determining mean energies of the scattered photons ~~on the~~

~~basis of~~ based on the radiation spectra; and

performing a reconstruction of the coherent scatter computed

tomography data by using the mean energies.

5. (Currently Amended) The method of claim 1, ~~wherein, on the~~

~~basis of the attenuation data,~~ further comprising the acts of

determining, based on the attenuation data, a ~~second~~ material ~~is~~

~~determined~~ which is located on a path of a scattered photon of the

scatter radiation in the object of interest; ~~wherein an absorption~~

~~spectrum of the second material is used for~~

determining a mean energy of the scattered photon using an

absorption spectrum of the material; and ~~wherein~~

using the mean energy ~~is used~~ for the reconstruction.

6. (Currently Amended) ~~Coherent~~ A coherent scatter computed

tomography apparatus, the apparatus comprising:

a detector assembly ~~(1, 4, 15, 30, 34)~~ with a source of radiation ~~(4)~~,

a first detector ~~(15)~~; and

a second detector ~~(30, 34)~~;

wherein the detector assembly is arranged for rotation around an object of interest ~~(7)~~;

wherein the first <u>detector</u> and <u>the</u> second ~~detectors~~ <u>detector</u> are arranged opposite to the source of radiation;

wherein the first detector is arranged for acquiring attenuation data of the object of interest from primary radiation transmitted through the object of interest;

wherein the second detector is arranged for acquiring scatter radiation data of the object of interest from scatter radiation scattered from the object of interest;

wherein the apparatus performs a beam hardening compensation of <u>the</u> scatter radiation data ~~on the basis of~~ <u>based on</u> the acquired attenuation data <u>and based on an energy shift of an equivalent object equivalent to the object of interest</u>; and

wherein the apparatus performs a reconstruction of coherent

scatter computed tomography data by using the compensated scatter

radiation data.

7. (Currently Amended)   The apparatus of claim 6, wherein the

~~compensating for the beam hardening effect~~ beam hardening

compensation is performed ~~on the basis of~~ based on an energy shift

determined ~~on the basis of~~ based on an equivalent ~~object, the~~

object having a known beam hardening effect ~~of which is known~~.

8. (Currently Amended)   The apparatus of claim 6, wherein, ~~on~~

~~the basis of~~ based on the attenuation data, a ~~second~~ material is

determined which is located on a path of a scattered photon of the

scatter radiation in the object of interest; wherein an absorption

spectrum of the ~~second~~ material is used for determining a mean

energy of the scattered photon; and wherein the mean energy is used

for the reconstruction.

9. (Currently Amended)   ~~Data~~ A data processing device for

reconstructing coherent scatter computed tomography data of an

object of interest ~~(7)~~, wherein the device comprises:

a memory ~~(52)~~ for storing attenuation data and scatter

radiation data; and

a data processor ~~(51)~~ adapted to perform the following

~~operation~~ acts:

acquiring attenuation data of the object of interest from

primary radiation transmitted through the object of interest;

performing a beam hardening compensation of scatter radiation

data ~~on the basis of~~ based on the acquired attenuation data and

based on an energy shift of an equivalent object equivalent to the

object of interest;

wherein the scatter radiation data is based on scatter

radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data

by using the compensated scatter radiation data.

10. (Currently Amended) ~~Computer~~ A computer readable medium

embodying a computer program for reconstructing coherent scatter

computed tomography data of an object of interest ~~(7)~~, wherein,

when the computer program is executed on one of a data processor

and a coherent scatter computed tomography apparatus, the following

~~operation is~~ acts are executed:

acquiring attenuation data of the object of interest from

primary radiation transmitted through the object of interest; ~~and~~

performing a beam hardening compensation of scatter radiation

data ~~on the basis of~~ based on the acquired attenuation data and

based on an energy shift of an equivalent object equivalent to the

object of interest;

wherein the scatter radiation data is based on scatter

radiation scattered from the object of interest; and

reconstructing the coherent scatter computed tomography data

by using the compensated scatter radiation data.

11. (New)   The method of claim 1, wherein the performing act

includes correcting energy of the scatter radiation by the energy

shift of the equivalent object.

12. (New)   The coherent scatter computed tomography apparatus

of claim 6, wherein the beam hardening compensation includes

correcting energy of the scatter radiation by the energy shift of

the equivalent object.

13. (New)   The data processing device of claim 9, wherein the performing act includes correcting energy of the scatter radiation by the energy shift of the equivalent object.

14. (New)   The computer readable medium of claim 10, wherein the performing act includes correcting energy of the scatter radiation by the energy shift of the equivalent object.